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2 August 1957

MEMORANDUM FOR: THE RECORD

SUBJECT : Terrain Avoidance System Conference

1. Time and Place: 1 August 1957, West Outbuilding

2. Attendance: 25X1

3. Discussion:

briefed those present on the current status of Terrain Avoidance System; a resume of which is attached. After discussing the various antenna configurations available, it was decided that a self-contained pod mounted on a wing rocket rack would offer the most satisfactory solution to the problem of locating the antenna on an already "busy" airframe. 25X1

Accordingly, was requested to prepare tentative assembly or outline drawings of all component boxes designated for pod mounting. This would include the antenna, antenna mount, R/T units, antenna RF feed assembly and servo units for producing antenna scan motion. These drawings are to be presented to Mr. project engineer, at a Headquarters meeting the latter part of August for his use in performing an aerodynamic feasibility study on the proposed pod. 25X1 25X1

Westinghouse will continue working on the system while awaiting results of the installation study. 25X1

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TSS/APD

Distribution:
Orig.-P-196 w/attachment
w/attachment
w/attachment
1 - Chrono

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TSS/APD/MH/mm (2 August 1957)

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Part of
Monthly Progress
Report for July 1957.

APPENDIX I

Installation Investigation

On July 11, 1957 three Westinghouse engineers visited the airplane manufacturer for the purpose of inspecting a typical A/C of the type designated for this installation. The various aspects of the radar equipment and its installation were discussed with two of the airplane manufacturer's engineers assigned to the project. This meeting resulted in the following observations:

1. "X" scope could be located in a satisfactory position in the pilot's instrument panel.

2. No existing place in the underside of the forward fuselage to mount the antenna - R-T package. This package required a space (approx. 20 inches high by 24 inches wide by 36 inches long) inside the fuselage in which to recess the antenna feed and R-T unit. A radome, having a frontal approximately 40 inches by 40 inches, with its accompanying fairing was required on the exterior of the fuselage.

   The airplane manufacturer's engineers indicated that the APS-23 system might be removed from this A/C. Inspection of the APS-23 antenna and radome indicated that, with reasonable modifications the T. A. antenna package could be fitted into its location.

   This was the only apparent feasible location in the fuselage for the antenna package. The A/C company engineers indicated the possibility of installing the antenna in a pod mounted on a wing tip. This was not considered desirable by Westinghouse engineers due to probable errors in the radar presentation produced by twisting of the A/C wings.

3. The remaining T.A. components could easily be installed in the waist section of the A/C, provided the APS-23 system were removed. Without the removal of APS-23 components, space for the T. A. equipment would be very difficult to obtain but was not considered impossible.

4. 400 Cycle power, in any great quantity, is not available. Even if the APS-23 system were removed, available 400 cycle power would be inadequate. It was pointed out by the A/C company engineers that there was an adequate supply of variable frequency (380 cy. to 1000 cy).

Subsequent to the above meeting, it was learned that the APS-23 system could not be removed in order to make room for the T.A. radar. The antenna package was reconsidered from the standpoint of eliminating the need for recessing any portion.

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On July 16, the A/C company engineers were asked to look into the possibility of mounting the antenna:

1. In a pod of 36 to 40 in diameter cantilevered from the side of the fuselage as far forward as possible.

2. In a blister type radome and fairing on the side of the fuselage.

3. In the present area of the nose observer's station.

On July 18, the A/C engineers reported that the pod and blister installations were not feasible since they could not be mounted close enough to the nose to permit a 30° side look. Installation in the nose observer's station was practical, provided the observers were omitted on missions during which the T. A. system was required. It was subsequently learned that the observer could not be omitted.

On July 22, the A/C engineers were requested to check the possibility of a chin type installation under the nose and immediately aft of the observer's window, and in such a manner that the DF and Beacon antennaa, presently located in this region, could be dropped down to the under surface of the T.A. antenna tail fairing. It was anticipated that this installation would require a window frontal of 36 to 40 in. square without any recessing into the fuselage.

On July 23, the A/C engineer advised that this did not appear to be impossible but that a number of potential problems would have to be investigated, such as, increased loading on the APS-23 radome, air turbulence at the doors of the nose wheel well, reinforcement of the A/C forward section due to the additional weight and air load, and the possible need to add ballast. A few thousand manhours would be required to make this study.

The A/C engineer was advised that the requirement for frequency regulated power would be very small. The bulk of the T.A. power requirement could be taken from the unregulated source.